

What Is Claimed Is:

1 ✓ 1. An image reading apparatus reading an image by  
2 emitting light from a light source onto a surface  
3 of an original, and converting the light reflected  
4 from or passed through the surface of the original  
5 into an electrical signal, the image reading  
6 apparatus comprising:

7 a color image pick-up device having groups of  
8 pick-up elements corresponding to a plurality of  
9 colors, the groups of pick-up elements including a  
10 plurality of pick-up element trains which are  
11 arranged in parallel to one another on a substrate,  
12 the pick-up element train being formed with a  
13 plurality of pick-up elements arranged linearly;

14 an A/D conversion portion which subjects pixel  
15 output data of the color image pick-up device to  
16 A/D conversion;

17 a pixel data storage device which stores the  
18 pixel data subjected by the A/D conversion portion  
19 to the A/D conversion; and

20 an averaging device which applies an averaging  
21 process to a plurality of adjoining pixel data on  
22 each line stored in the pixel data storage device.

1 2. The image reading apparatus of claim 1,  
2 further comprising a selection device which selects  
3 whether applying the averaging process to the

4 plurality of adjoining pixel data on each line  
5 stored in the pixel data storage device.

1 3. The image reading apparatus of claim 2,  
2 wherein, in the color image pick-up device, at  
3 least one of the pick-up element trains is shifted  
4 relative to at least another of the pick-up element  
5 trains by a pitch smaller than width of one of the  
6 pick-up elements in an arrangement direction of the  
7 pick-up elements thereof.

1 4. The image reading apparatus of claim 3,  
2 wherein, in the color image pick-up device, the  
3 pick-up element trains are mutually arranged with  
4 a pitch integer times greater than twice each  
5 height of the pick-up elements in a direction  
6 perpendicular to an arrangement direction of the  
7 pick-up elements thereof.

1 5. The image reading apparatus of claim 4,  
2 wherein the groups of pick-up elements correspond  
3 to red, green and blue, respectively.

1 6. The image reading apparatus of claim 5,  
2 wherein each of the groups of pick-up elements  
3 includes a first element train and a second element  
4 train, and wherein the second element train is

5 shifted from the first element train by about half  
6 pitch of width of one of the pick-up elements.

1 7. The image reading apparatus of claim 6,  
2 wherein each of the groups of pick-up elements  
3 includes an opening smaller than a light receiving  
4 area of one of the pick-up elements, and a  
5 shielding portion blocking off the light directed  
6 to a peripheral edge portion of one of the pick-up  
7 elements.

1 8. The image reading apparatus of claim 1,  
2 further comprising an input device capable of  
3 setting a mode of reading an image different in at  
4 least one of resolution and image quality,

5 wherein the averaging process is not performed  
6 when a mode giving priority to resolution is set by  
7 the input device but performed when the mode giving  
8 priority to image quality is set thereby in order  
9 to read the image.

1 9. The image reading apparatus of claim 8,  
2 wherein, in the color image pick-up device, at  
3 least one of the pick-up element trains is shifted  
4 relative to at least another of the pick-up element  
5 trains by a pitch smaller than width of one of the  
6 pick-up elements in an arrangement direction of the  
7 pick-up elements thereof.

1 10. The image reading apparatus of claim 9,  
2 wherein, in the color image pick-up device, the  
3 pick-up element trains are mutually arranged with  
4 a pitch integer times greater than twice each  
5 height of the pick-up elements in a direction  
6 perpendicular to an arrangement direction of the  
7 pick-up elements thereof.

1 11. The image reading apparatus of claim 10,  
2 wherein the groups of pick-up elements correspond  
3 to red, green and blue, respectively.

1 12. The image reading apparatus of claim 11,  
2 wherein each of the groups of pick-up elements  
3 includes a first element train and a second element  
4 train, and wherein the second element train is  
5 shifted from the first element train by about half  
6 pitch of width of one of the pick-up elements.

1 13. The image reading apparatus of claim 12,  
2 wherein each of the groups of pick-up elements  
3 includes an opening smaller than a light receiving  
4 area of one of the pick-up elements, and a  
5 shielding portion blocking off the light directed  
6 to a peripheral edge portion of one of the pick-up  
7 elements.